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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,783	12/20/2001	Henricus Franciscus Johannus Jacobus Van Tongeren	NL 000766	3215

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EXAMINER

MACCHIAROLO, PETER J

ART UNIT PAPER NUMBER

2879

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,783

Applicant(s)

VAN TONGEREN ET AL.

Examiner

Peter J Macchiarolo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 11 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10,11,13,14,17 and 21-28 is/are pending in the application.
- 4a) Of the above claim(s) 23-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10,11,13,14,17,21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 23-28 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The reply filed on 11/11/2004 consists of changes to the claims, and further, the reply consists of remarks related to the prior rejection of claims in the previous Office Action. The above have been entered and considered. However, pending claims 1, 4-8, 10, 11, 13, 14, 17, 21-28 are not allowable as explained below.

Specification

2. The Specification entered on 12/20/2001 is objected to because it lacks the proper headings.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the photoresist (claim 21) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Election/Restrictions

5. Newly submitted claims 23-28 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The claims are directed to a different species as originally claimed. Claims 23-28 recite a selection layer is ink-jet printed to facilitate selective deposition of the metal or metal alloy on the surface, corresponding to figure 6, instead of ink-jetting the metal alloy on the surface between two relief patterns corresponding to figure 4.

6. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 23-28 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

8. Regarding claim 8, the phrase “such as” renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

The following is a quotation of 35 U.S.C. 102 which forms the basis for all obviousness rejections set forth in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Duthaler et al (USPN 6596438; “Duthaler”).**

10. Regarding claim 10, Duthaler shows in figure 12, a method of manufacturing an electroluminescent device comprising a metal or metal alloy electrode (520) provided in accordance with a desired pattern, said method comprising ink-jet printing molten metal or metal

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alloy on a surface in accordance with the desired pattern thus forming, upon cooling of the molten metal or metal alloy inkjet printed onto the surface, the metal or metal alloy electrode.¹

11. Regarding claim 11, Duthaler shows in figures 8 and 12, forming a relief pattern (130) on the surface.

12. The limitation “to facilitate patterning the pattern-wise ink-jet printed electrode,” is an intended use type limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 4, 5-8, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over previously cited Strum et al (USPN 6087196; “Strum”) in view of Asakawa (USPN 6686211; “Asakawa”).

¹ Duthaler, col. 14, ll. 18-28.

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14. In regards to claims 1 and 6, Strum shows in figure 15, an electroluminescent device comprising an electrode (138) with the EL device further comprising a relief pattern (shown in figure 12c).

15. Strum is silent to the electrode comprising a metal or metal alloy that has a melting point of 250°C or less.

16. However, Asakawa discloses in figure 3d and 4, a semiconductor device comprising an electrode (90, 9) comprising a metal or a metal alloy (In-Ga alloy Ga, and indium-tin solder) which inherently has a melting point of 250°C or less, and the device further comprising a relief pattern (12). Asakawa further teaches this configuration allows for easier manufacturing practices that reduce the total cost of the device.

17. Furthermore, it would have been obvious to one having ordinary skill in the art that the time the invention was made to use a metal or metal alloy which has a melting point of 250°C or less, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Further, one would arrive at this modification for a variety of reasons, including material availability and manufacturing processes with sensitive requirements.

18. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Strum's EL device with the electrode material of Asakawa to lower the total cost of the device.

19. The Examiner notes that the claim limitations, "pattern-wise ink-jet printed," and "that is ink-jet printed in a molten form" are drawn to processes of manufacturing, which are incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished

over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation has been considered, but not patentably distinct over Asakawa (see MPEP 2113).

20. The Examiner notes that the claim limitations, “for supplying charges to an electroluminescent layer of the electroluminescent device,” and “for patterning the pattern-wise ink-jet printed electrode,” are an intended use type limitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

21. Regarding claim 4, the Examiner notes that the limitation, “the electrode is an electrode for supplying electrons to the electroluminescent layer,” is an intended use type limitation, which has the same ramifications as discussed in numbered paragraph 20 above.

22. Regarding claims 5 and 14, Strum and Asakawa are silent to the electrode having a work function of 4.5 eV or less.

23. However, formulating Asakawa’s indium-gallium alloy, or indium-tin solder having a work function of 4.5 eV or less is an obvious configuration, since a lower work function value will allow for a lower pumping voltage for electron emission. Furthermore, it is known in the art that these alloys are capable of having a work function of less than 4.5 eV.

24. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to formulate Asakawa’s electrode

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material on Strum's EL device to have a work function of 4.5 eV or less to reduce the voltage required for electron emission.

25. Regarding claims 7 and 17, Strum shows in figure 12d, the device is a matrix display device of the passive type comprising one or more EL layers (88) sandwiched between a row electrodes (80) and column electrodes (92), independently addressable EL elements being formed at crossing of row and column electrodes, wherein the row electrodes comprise a metal or metal alloy.

26. The Examiner notes that the limitation, "wherein the row electrodes are pattern-wise ink-jet printed electrodes," is an intended use type limitation, which has the same ramifications as discussed in numbered paragraph 20 above.

27. Regarding claim 8, Sturm shows an OLED device is provided with an EL device as claimed in claim 1.

28. Claims 13 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duthaler in view of Asakawa.

29. Regarding claims 13 and 22, Duthaler discloses the electrode may be constructed from molten metal, but is silent to the specific electrode material or melting point.²

30. However, as discussed above, Asakawa discloses in figure 3d and 4, a semiconductor device comprising an electrode (90, 9) comprising a metal or a metal alloy (In-Ga alloy, Ga, and indium-tin solder) which inherently have melting points of 250°C or less, and more specifically

can have melting points between 150°C and 60°C. Asakawa teaches this configuration allows for easier manufacturing practices, which reduce the total cost of the device.

31. Furthermore, it would have been obvious to one having ordinary skill in the art that the time the invention was made to use a metal or metal alloy which has a melting point of 250°C or less, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

In re Leshin, 125 USPQ 416. One would arrive at this modification for a variety of reasons, including material availability and manufacturing processes with sensitive requirements.

Furthermore, one would be motivated to formulate a metal alloy with a low melting point to reduce the energy needed to melt the metal for Duthaler's ink-jet manufacturing method.

32. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Duthaler's EL device with the electrode material of Asakawa to lower the total cost of the device, and since this is a matter of obvious design choice.

33. **Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duthaler in view of Applicant's recited prior art.**

34. Regarding claim 21, Duthaler is silent to forming the relief pattern includes patterning of a photoresist material, but instead teaches the relief patterns are ink jet printed.

35. However, patterning a photoresist material during the relief pattern forming step is a well-known method, as evidenced by Applicant's statement at page 10, lines 33-35. One would

² Duthaler, col. 14, ll. 18-28.

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be motivated to this configuration for a variety of reasons, including material and machine availability, and further, since the resultant relief pattern will be extremely accurate and formed relatively quickly.

36. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the device of Duthaler with photoresist material being patterned.

Response to Arguments

37. Applicant's arguments with respect to claim have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

39. USPN 6551725 published to Raychaudhuri is evidence that an alloy of gallium and indium has a work function of below 4.5 eV.

40. USPN 4816885 published to Yoshida is evidence that forming a relief pattern includes patterning a photoresist material.


41. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375. The examiner can normally be reached on 8:30 - 5:00, M-F.

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42. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

43. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


pjm


Joseph Williams
Primary Examiner
AU 2879